ABSTRACT

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Title of diploma thesis: Possibilities of platelet count evaluation by analyzer Sysmex XN in a group of patients with thrombocytopenia

This diploma thesis deals with the problems of platelet count evaluation in thrombocytopenic patients. There are several principles of determination of platelet count, which are currently used. The aim of this thesis is to assess and analyze three of them (impedance, optical and fluorescence method) in 400 patients. The theoretical part includes topics like function and development of platelets, principles of their count determination and pathology associated with low platelet count. In the experimental part the obtained data is graphically and statistically evaluated to analyse the agreement between three measurements.

Methods: Analysis of complete blood counts was performed by the analyzer Sysmex XN-10. Platelet counts were obtained from PLT-I, PLT-O and PLT-F methods. Some blood samples required a microscopic control of platelet morfology.

Results: The obtained data was statistically evaluated with help of Wilcoxon test and Bland-Altman plots. Between all three methods very good agreement was showed. Nevertheless, there exist statistically significant differences, which cause diagnostic problems. The great agreement was showed between PLT-F and PLT-O method (it is probably due to the relation of optical principles). Another great agreement was unexpectedly showed between PLT-F and PLT-I method, which can be explained by a big heterogenity of patient diagnoses.

Keywords: Platelet count, Sysmex XN, PLT-F channel, thrombocytopenia